

WHAT IS CLAIMED IS:

1. A method for servicing a cooling system for an electronic device,  
the method comprising:
  - 5 switching the electronic device from a normal operating mode wherein the electronic device generates heat to a reduced heat generating mode wherein the electronic device generates heat at a reduced rate;  
continuing to operate the electronic device in the reduced heat  
10 generating mode while the cooling system is being serviced; and,  
subsequently switching the electronic device from the reduced heat generating mode to the normal operating mode.
2. A method according to claim 1 wherein switching the electronic  
15 device from the normal operating mode to the reduced heat generating mode comprises reducing a clock frequency applied to the electronic device.
3. A method according to claim 2 wherein reducing the clock  
20 frequency applied to the electronic device comprises reducing the clock frequency by 85% or more.
4. A method according to claim 2 wherein, in the normal operating  
25 mode the clock frequency is in excess of 1.5 GHz and in the reduced heat generating mode the clock frequency is less than 250 MHz.

5. A method according to claim 2 wherein switching the electronic device from the normal operating mode to the reduced heat generating mode comprises operating the electronic device at a reduced duty cycle.  
5
6. A method according to claim 1 wherein switching the electronic device from the normal operating mode to the reduced heat generating mode comprises operating the electronic device at a reduced duty cycle.  
10
7. A method according to claim 6 wherein operating the electronic device at a reduced duty cycle comprises operating the electronic device at a duty cycle of 25% or less.
- 15 8. A method according to claim 6 wherein operating the electronic device at a reduced duty cycle comprises issuing an alternating sequence of HALT and RESTART commands to the electronic device.
- 20 9. A method according to claim 8 wherein issuing the alternating sequence of HALT and RESTART commands to the electronic device comprises toggling a logic signal applied to a halt pin on the electronic device.
- 25 10. A method according to claim 8 wherein operating the electronic device at a reduced duty cycle also comprises reducing the duty cycle by way of a mechanism built into the electronic device.

11. A method according to claim 10 wherein the mechanism built into the electronic device comprises a mechanism operating according to the Advanced Configuration and Power Interface standard.
- 5 12. A method according to claim 6 wherein operating the electronic device at a reduced duty cycle comprises reducing the duty cycle by way of a mechanism built into the electronic device.
- 10 13. A method according to claim 10 wherein the mechanism built into the electronic device comprises a mechanism operating according to the Advanced Configuration and Power Interface standard.
- 15 14. A method according to claim 1 wherein switching the electronic device from the normal operating mode to the reduced heat generating mode comprises disabling one or more subsystems within the electronic device.
- 20 15. A method according to claim 14 wherein the one or more systems comprise a cache memory.
- 25 16. A method according to claim 1 wherein the electronic device comprises a data processor.
17. A method according to claim 1 comprising monitoring a temperature of the electronic device while the electronic device continues to operate in the reduced heat generating mode.

18. A method according to claim 17 comprising displaying the temperature of the electronic device on a display while operating the electronic device in the reduced heat generating mode.
- 5 19. A method according to claim 18 wherein the display is located in a position where it is visible to a person who is viewing the cooling system for the electronic device through an access opening in a housing.
- 10 20. A method according to claim 17 comprising, at least in part on the basis of the monitored temperature, computing an estimated time until the temperature of the electronic device reaches a threshold value and displaying the estimated time.
- 15 21. A method according to claim 17 comprising causing the electronic device to be shut down in the event that the temperature of the electronic device reaches a threshold value.
- 20 22. A method according to claim 21 comprising switching the electronic device from the normal operating mode to the reduced heat generating mode upon a person initiating a first signal indicating that the person is ready to service the cooling system.
- 25 23. A method according to claim 22 comprising switching the electronic device from the reduced heat generating mode to the normal operating mode upon a person initiating a second signal indicating that the person has completed servicing the cooling system.

24. A method according to claim 22 wherein the first signal is generated in response to the person activating a control.
- 5 25. A method according to claim 22 wherein the first signal is generated in response to the person disconnecting the cooling system from a source of electrical power.
- 10 26. A method according to claim 23 wherein the first signal is generated in response to disconnection of the cooling system from a source of electrical power and the second signal is generated in response to reconnection of the cooling system to the source of electrical power.
- 15 27. A method according to claim 26 wherein the cooling system comprises a fan and servicing the cooling system comprises replacing the fan.
- 20 28. A method according to claim 17 comprising indicating the temperature of the electronic device by way of an audible signal while operating the electronic device in the reduced heat generating mode.
- 25 29. A method according to claim 1 wherein the cooling system comprises a fan and servicing the cooling system comprises replacing the fan.
30. A method for servicing apparatus which includes a cooling system for an electronic device, the method comprising:

operating the apparatus in a temperature control mode in which temperature rise in the electronic device is reduced;

continuing to operate the apparatus in the temperature control mode while the cooling system is being serviced; and,

5 subsequently switching the apparatus back to a normal operating mode.

31. Electronic apparatus comprising:

a heat generating electronic device;

10 a cooling system operational to cool the electronic device;

a maintenance procedure controller configured to:

switch the electronic device from a normal operating mode, wherein the electronic device generates heat, to a reduced heat generating mode, wherein the electronic device generates heat at a reduced rate, upon detection of a signal indicating that the cooling system is about to be serviced; and,

15 switch the electronic device from the reduced heat generating mode to the normal operating mode upon detection of a signal indicating that servicing of the cooling system has been completed.

20 32. Electronic apparatus according to claim 31 comprising a clock generator operative to generate a clock signal supplied to the electronic device.

25

33. Electronic apparatus according to claim 32 wherein the maintenance procedure controller is connected to control a frequency of the clock signal.
- 5 34. Electronic apparatus according to claim 32 wherein the maintenance procedure controller is connected to control a duty cycle of the electronic device.
- 10 35. Electronic apparatus according to claim 34 wherein the electronic device comprises a halt pin and the maintenance procedure controller is configured to apply a logic signal to the halt pin to control the duty cycle of the electronic device.